

July 30, 2003

Chiara Clemente
Environmental Scientist
San Diego Regional Water quality Control Board
9174 Sky Park Court, Suite 100
San Diego, Ca 92123

Dear Ms. Clemente:

**COMMENTS REGARDING REPORT OF WASTE DISCHARGE –CAMP PENDLETON
DISCHARGE TO THE OCEANSIDE OCEAN OUTFALL**

Thank you for allowing the Department of Health Services (DHS) the opportunity to comment on the Report of Waste Discharge (ROWD) and Tentative Waste Discharge Requirements (TO) Order No. R9-2003-0155 for the issuance of Waste Discharge Requirements to Camp Pendleton, which allows the discharge of additional treated wastewater via the Oceanside Ocean Outfall (OOO).

As you are aware, DHS is responsible for the regulation of commercial shellfish harvesting areas with respect to their classification, certification and continued compliance with the shellfish growing water quality standards of the National Shellfish Sanitation Program (NSSP) Model Ordinance (2002). DHS regulates commercial shellfish areas by conducting regular sanitary surveys of all of the actual and potential sources of pollution that may affect water quality in the shellfish areas to help ensure that certified growing areas continue to meet the NSSP water quality criteria. The increase in the volume of un-disinfected municipal wastewater discharged in the vicinity of a commercial shellfish harvest area thus raises a concern regarding a potential impact on water quality and shellfish quality. This in turn could create an increased risk of human health impacts associated with shellfish consumption from this.

DHS staff has reviewed the ROWD for the discharge of wastewater from Camp Pendleton's existing four sewage treatments plants that currently discharge un-reclaimed wastewater to the Santa Margarita River. The ROWD and TO describe an additional discharge of up to 3.6 million gallons per day via the existing OOO. It is important to note that the lack of monitoring data pertaining to effluent indicator organism concentrations and ocean transport (current speed and direction) in the



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vicinity of the outfall makes it difficult to accurately assess the potential impact of the added discharge.

After careful review of the Report of Waste Discharge and the Tentative Order, DHS offers the following comments for the San Diego Regional Water Quality Control Board's consideration:

1. **(ROWD, Section 3.5, page 17).** A summary of bacteriological water quality from monitoring stations during the calendar year 2002 is provided. The nearshore stations, located approximately 800-1,000 feet offshore, are sampled monthly. Thus, only 12 samples from each station are considered in the evaluation. Many years worth of monitoring data have been collected by the City of Oceanside. This substantial data set should be analyzed to evaluate whether or not the effluent plume occasionally reaches the shoreline. In order to better represent the entire range of environmental variability that exists in the coastal waters near the outfall, the time period and the number of samples evaluated should be maximized. A question that should be posed is whether elevated levels of bacteria in the offshore and nearshore stations occur at times when samples from the shore stations are low in coliform. Such a pattern could be evidence of the movement of the effluent plume into the nearshore from the outfall rather than from shore.
2. **(ROWD, Section 3.6, page 19).** The statement "To date the Regional Board has not designated any shellfish harvesting areas in the vicinity of the ocean outfall" is misleading. A commercial shellfish harvesting operation area has existed in an adjacent area (Agua Hedionda Lagoon) since at least 1985. Agua Hedionda Lagoon is located about 3 miles from the OOO. It would seem reasonable that areas of the adjacent shoreline be included in the area "in the vicinity of the ocean outfall." In addition, DHS has noted an increased interest in the potential use of nearshore coastal waters for commercial shellfish aquaculture. It will be ever more important to recognize this beneficial use and to conduct the necessary monitoring to accurately determine the areas outside of the influence of the wastewater treatment plant (WWTP) discharges. Thus, the Regional Board should stipulate that the receiving water be protected for the existing and future beneficial uses of shellfish growing and harvesting.
3. **(ROWD, Section 4.5.4, page 40).** The statement "The addition of the MCB Camp Pendleton STP effluent to the City of Oceanside Ocean Outfall is not projected to alter receiving water bacteriological quality..." should be supported by a quantitative analysis. As the mass loading of wastewater pollutants from a point source increases, the area of impact may be expected to increase. From a public health perspective, it is not sufficient to merely show that the typical conditions present at the outfall negate the possibility of a water quality impact to shellfish growing areas.

Instead, an attempt to quantify the frequency and magnitude of the water quality impacts under the most adverse environmental conditions that occur should be made. Specifically, it is acknowledged in the ROWD that during periods when the

thermocline disappears, the effluent plume may reach the ocean surface. Thus, during periods when the thermocline is absent, coinciding with the occurrence of strong winds, the possibility increases for the effluent plume to extend a greater distance from the outfall. Even in times when the thermocline is present, upwelling or downwelling can result in onshore movement of offshore waters at depth or on the surface, respectively. DHS is particularly concerned about the affect on the existing shellfish harvesting area in Agua Hedionda Lagoon, and the discharger should evaluate the potential impact of the discharge on the shellfish harvest operation. In addition, the discharger should attempt to quantify the affect of 3.6 MGD of additional discharge to the OOO. The additional proposed discharge is cumulative with the 16.3 MGD currently discharged (maximum daily flow for existing WDRs 2000-11 and 2000-12), and the added discharge may increase the risk of the plume reaching the shellfish growing area. Although the chemical contaminants may meet the TO limits at the zone of initial dilution, bacterial pathogens, for which there are no established limits in the TO, may require miles of dilution via dispersion and die-off before shellfish growing water standards are met.

4. **(TO, Section B. Item 7, page 17).** This section states (1) that the location of a waste discharge must be based on a “detailed assessment of the oceanographic characteristics and current patterns to assure that pathogenic organisms and viruses are not present in areas where shellfish are harvested....”; and (2) paraphrasing the remainder of the section, that if waste contains pathogenic organisms it must either be discharged a sufficient distance from a shellfish area or disinfected prior to discharge. These data are not provided in either the ROWD or TO. DHS recommends that the oceanographic data be presented that demonstrates sufficient reduction in pathogens such that the existing growing area not be impacted by the increased discharge volume.
5. **(TO, Section C. Item 1, page 18).** This section states that in all areas where shellfish may be harvested for human consumption, bacterial standards with respect to total coliform must be met “throughout the water column”. Currently, none of the receiving water stations in either the shore or near-shore stations is closer than about two miles from Agua Hedionda Lagoon. The Monitoring and Reporting Program (page 67-68) attached to the TO designates one additional shore and two additional near-shore stations to be determined at a later date. DHS recommends that the monitoring program be modified to include a shore and a nearshore station located near the mouth of Agua Hedionda Lagoon to help evaluate the potential affect of the OOO discharge on the shellfish growing area over time.

Modeling Bacterial Concentrations in the Receiving Water

In order for DHS to classify a shellfish growing area for the harvest of shellfish for human consumption, it must determine an area around each sewage outfall that is closed to shellfish harvesting. The size of the closure zone must be based on many parameters, such as the volume of the discharge, the effluent bacteriological quality of the discharge, the bacterial die-off rate, and the time of waste transport to the shellfish growing area. A quantitative analysis by the proponent of the affect of an increased

discharge to the OOO on the nearby shellfish growing area was not provided in the ROWD, therefore, DHS has performed a preliminary evaluation of the potential impact of the existing and proposed discharge with the computer model PLUMES developed by EPA. The modeling assumed a discharge FC concentration for the combined discharge of 510,000 FC/100 mL. This value represents the highest MPN of 11 effluent grab samples collected by the City of Oceanside from the Cities' WWTPs during October, November, and December 2001. However, because of the lack of routine effluent monitoring for coliform, it is not known if this concentration represents worst-case conditions. The use of this value by DHS was used to generate conservative model results protective of public health in light of the lack of ongoing monitoring of bacterial concentrations in the OOO discharge. Such monitoring would allow for characterization of the normal range of FC concentrations in the discharge. DHS attempted to model the conditions that exist when there is no thermocline (i.e., late winter conditions) allowing ocean surface currents of varying speed and direction to move the plume in a given direction.

The results of preliminary model runs indicate that the shellfish bacterial standard could be exceeded under certain conditions that may exist as a result of the proposed permit action. The modeling predicts that ocean surface currents at the higher end of the range reported in the ROWD (0.80 feet/ second) coincident with a maximum permitted flow of 27.7 mgd and a surface current direction at a 20 degree angle to the diffuser, could result in an exceedance of the shellfish criterion applied to the *Restricted* growing area classification of Agua Hedionda Lagoon (88 FC/100 mL MPN)¹ for a distance of approximately 16,000 feet from the diffuser. The mouth of Agua Hedionda Lagoon is approximately 15,800 feet from the OOO. Therefore, under these conditions the lack of discharge limits for FC could result in an increase in the radius of the shellfish harvest closure zone applied around the OOO that would include the mouth of Agua Hedionda Lagoon.

The findings of an analysis of the effect from an increase in pathogen loading resulting from the proposed additional discharge are relevant not only to the currently active shellfish harvesting area in Agua Hedionda Lagoon, but to future shellfish growing areas in the coastal waters near the outfall. Within the past few years, prospective shellfish growers have approached DHS about the feasibility of locating shellfish areas in the nearshore waters of southern California. With each such inquiry DHS must determine a safety closure zone around each outfall to assure that harvested shellfish are not adversely affected by the discharge under normal operating conditions of the wastewater treatment plant. It has been difficult for DHS to determine the distance from sewage outfall diffusers along the San Diego coast due to the lack of adequate data on the quality of the effluent, as well as data quantifying ocean current speed, direction, and duration, which are integral to evaluating transport of the effluent plume.

The preliminary model results of the proposed added discharge from CP indicate the need for a larger closure zone around the OOO. DHS recommends that either the SDRWQCB or the Oceanside WWTP conduct a more thorough analysis of the effect of increasing the discharge volume to receiving waters with respect to FC concentrations

¹ Shellfish growing areas classified in accordance with the NSSP as *Approved* must meet a more stringent water quality criterion of 14 FC/100mL MPN.

and the NSSP water quality standards. Such an analysis by SDRWQCB or the discharger could be used to determine the appropriate TC/FC limits with or without disinfection. DHS would be quite willing to provide information and assistance for this effort. To increase the accuracy of the modeling, it would be desirable to collect ongoing data to (1) characterize FC concentration of the discharge over time; and (2) characterize ocean current speed and direction in the area around the diffuser especially in the direction of the mouth of Agua Hedionda Lagoon. Effective monitoring of the discharge would include offshore and nearshore sample collection during windy conditions when ocean surface temperatures are low (no thermocline conditions).

DHS would like to see the discharger determine the maximum distances, both longshore and cross-shore, that the modified effluent plume resulting from the proposed discharge may affect indicator organism concentrations relative to existing or proposed shellfish areas. To estimate FC transport distances that are conservative and thus protective of consumers of shellfish, the use of modeling supported by appropriate monitoring of ocean currents and effluent FC concentrations should be used. The monitoring should be designed to encompass the extremes of environmental and effluent variability that would result in longer transport distances, in particular to determine effluent limitations needed to prevent elevated FC at the mouth of Agua Hedionda Lagoon.

If you have any questions or if I can be of further assistance, please give me a call at (510) 540-3210.

Sincerely,

Rolf Frankenbach
Environmental Scientist
Environmental Management Branch
Preharvest Shellfish Sanitation Unit